

List of Insects represented in Abbot's Portfolio of Georgia Birds.

- Plate 6. "*Sphinx lineata*."
 " 20. "Small blue Butterfly" = *Lycæna*.
 " 25. "*Noctua guaræ*."
 " 32. "Great Tiger Moth" = *Arctia*.
 " 45. "Clouded yellow Butterfly" = *Colibas*.
 " 61. "Great meadow brown Butterfly" = *Satyrus*.
 " 62. "Purple hair streak Butterfly" = *Thecla*.
 " 65. "None so pretty Moth" = *Deiopeia*.
 " 67. "Cream spotted Tyger Moth." = *Callomorpha*.
 " 85. "*Papilio arythia*" = *Junonia*.
 " 87. (Grasshopper on ground; not named) = *Chortophaga*.
 " 88. "Ajax Butterfly." = *Papilio*.
 " 91. "Yellow spotted Tyger Moth" = *Alypia*.
 " 106. "Small yellow Butterfly" = *Terias*.
 " 111. "Yellow hook tip Moth" (Bombycid?).
 " 122. (Butterfly — name cut off) = *Agraulis*.

NOTES ON THE ANATOMY OF THE CUBAN TROGON.

BY HUBERT LYMAN CLARK.

THANKS to the kindness of Mr. Outram Bangs and Mr. J. L. Peters, a Cuban Trogon (*Priotelus temnurus temnurus*) collected by Mr. Peters, was some time ago placed in my hands for study. It was well preserved in alcohol and in excellent condition.

The pterylosis of the trogons was described by Nitzsch, who examined four species, but probably from skins. Subsequent writers seem to have relied on Nitzsch's figures. The spinal feather tract is quite passerine and those of the ventral surface are nearly as much so. The Cuban Trogon was not however seen by Nitzsch and shows some peculiarities which are worthy of descrip-

tion. These are however, mostly confined to the head and neck for the humeral, femoral, sternal, ventral and dorsal tracts are very similar to those of *Trogon viridis* as shown by Nitzsch's description and figures; the dorsal "saddle" however, is elongated elliptical rather than "elongated rhombic," as there are no distinct lateral angles.

The tracts of the head are entirely separated from those of the lower neck and throat, to a degree and in a manner which I have never seen in any other bird. On the middle of the forehead, between the eyes, is a dense, sharply defined tract, which forks anteriorly, a broad band passing forward and downward to the base of the upper mandible on each side; posteriorly the median tract becomes diffuse and loses itself on the back of the head. There are no contour feathers on the upper surface or on either side of the anterior end of the neck. On the lower surface of the head, beginning close to the base of the bill in the median line is a sharply defined tract about *five* feathers wide which very soon divides, the two branches diverging and narrowing rapidly; each passes up onto the side of the head, where it ends below the ear. The only other contour feathers on the head are in a small tract on each side, just in front of the eye; some few of these feathers extend up over the eye but more comprise a narrow band running from the angle of the mouth to the ear; anteriorly this tract does not quite connect with the lateral fork of the forehead tract.

On the upper side of the base of the neck, the spinal tract begins abruptly with a width of about five feathers; from its very start this tract is dense and well defined. On the lower surface of the neck, a lower cervical tract begins nearly as far forward as the ear; it is six or seven feathers wide and sharply defined from the first. It soon widens and forks, each fork giving rise to a sternal tract. From the anterior end of each sternal tract a branch passes upward onto the shoulder and joins the humeral tract. The outer distal corner of the humeral tract extends outward along the humerus to the elbow, the feathers of this area reminding one of tertiaries. The secondaries are eleven or twelve in number but one or two of those at the elbow are very small and in examination of a skin, there would seem to be but ten; Nitzsch says there are eight to ten secondaries in the trogons. The primaries are ten in number with

the sixth longest; the sequence is 6, 7, 5, 8, 4, 9, 3, 2, 1, 10; the eighth is 97 mm. long, the fourth is 90 mm. and the tenth, 45 mm.

The rectrices are twelve with ten major coverts; there is no covert for rectrix no. 1 (middle pair); the covert for no. 2 lies over its outer side; those for nos. 3, 4 and 5 are in the same relative position while that for no. 6 lies over its inner side. This is the usual passerine arrangement. The posterior end of the spinal tract becomes broad (ten feathers) and dense at the oil-gland where it ends, instead of being narrow there as shown in Nitzsch's figures; it is distinctly separated from the series of major upper tail coverts. The oil-gland itself is naked, without a tuft. The major under tail coverts are 14 in number but on each side pass into a well marked post-anal tract of covert feathers; the major coverts of the middle rectrices are pushed out of position, so that coverts 1 and 2 lie, one over the other under rectrix 2, covert 3 is between rectrices 3 and 4, covert 5 is under rectrix 4, 6 is under 5 and 7 under 6. It is not clear whether covert 7 is properly a major covert or is merely a large minor covert pushed into the major covert line. The whole question of the relation of under coverts to rectrices demands investigation.

Passing to the internal anatomy, we find the palate is essentially as Forbes found it in *Pharomacrus*,¹ but the vomer is shorter and stouter than in that trogon and does not extend forward between the maxillopalatines. The sternum, as in other trogons, has two deep incisions on each side, in the posterior margin, and the manubrium though long and stout is not at all forked. Four pairs of ribs reach the sternum but the fifth pair falls short by over a millimeter, its tip resting only against the base of the fourth.

The tongue is not "short and three-sided," as trogon's tongues are said to be, but is 10 mm. long and has a bifurcate tip, each half of which is a pointed horny bit, one millimeter long. Posteriorly the tongue is 4 mm. wide with each posterior corner developed into a conspicuous conical horny point over a millimeter long. There is no crop and the gizzard is large and spherical, 18 mm. in diameter. It was crammed full of fruits 7-8 mm. long by 4-5 mm. thick; there were 10-12 of these fruits, some of which were considerably

¹ Proc. Zool. Soc. London, 1881, p. 836.

macerated, however. The intestine was 180 mm. long while the cæca were 36 and 28 mm. respectively. The cæca are thus relatively very long, much longer than in the species of Trogon and *Pharomacrus* examined by Garrod.

FURTHER NOTES AND OBSERVATIONS ON THE
BIRDS OF HATLEY, STANSTEAD COUNTY,
QUEBEC, 1916-1917.

BY H. MOUSLEY.

IN 'The Auk' for 1916, Vol. XXXIII, pp. 57-73, 168-186; will be found my first account of the birds of this district covering a period of five years (1911-1915) and embracing 122 different species. Since that account was written a further 41 have been added to the list, and in this paper I propose to deal with these new species in the same way as previously, carrying on the numbering also from where it left off. Before proceeding with these however, I would like to make a few remarks on the seasons of 1916 and 1917, and the increase or otherwise of certain interesting birds, as well as to mention the fact that the breeding list has been increased from 63 to 77 species, the fourteen new ones whose nests, eggs or young had not been previously taken being, Marsh Hawk, Red-shouldered Hawk, Sparrow Hawk, Long-eared Owl, Belted Kingfisher, Red-headed Woodpecker, Meadowlark, Pine Siskin, Scarlet Tanager, Nashville, Black-throated Blue, Blackburnian, and Black-throated Green Warblers, as well as the Water-Thrush. Of the two aforementioned seasons probably 1917 was the coldest, wettest and most backward of the two, and many species, especially the warblers, were held up on migration, and were from ten days to a fortnight behind time. Ruffed Grouse suffered severely, most of the chicks being lost in both seasons from exposure to the wet and cold, and these birds in my opinion badly need a three years close season, not only here but in many other parts of the country, to recuperate.